

Quanterra
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00.07.05

CERTIFICATE OF ANALYSIS

RECEIVED
APR 11 2000

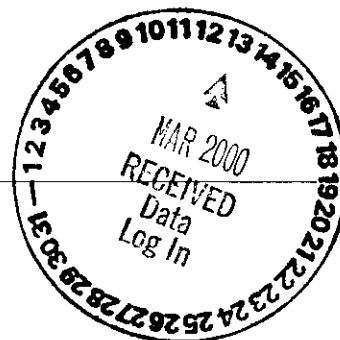
Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

EDMC

March 13, 2000

Attention: Joan Kessner

SAF Number	:	B99-014
Date SDG Closed	:	March 13, 2000
Number of Samples	:	Two (2)
Sample Type	:	Water
SDG Number	:	W03095
Data Deliverable	:	7-Day / Summary



I. Introduction

On February 28, 2000, two water samples were received at the Quanterra Richland Laboratory (QRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

<u>QESRL ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9D93RP10	B0XN11	WATER	2/28/00
9D93RQ10	B0XN10	WATER	2/28/00

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analysis was:

Gas Proportional Counting
Total Strontium by method RICH-RC-5006

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III. Quality Control

The analytical results for each analysis performed under SDG W03095 includes a minimum of two Laboratory Control Samples (LCS) and one method (reagent) blank. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments


Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The MDA for sample B0XN10 does not meet the CRDL due to the reduced volume analyzed. The detected activity exceeds the achieved MDA, therefore the data are accepted for reporting. Except as noted, the laboratory control samples, batch blank and sample results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:


Jackie Waddell
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03095 / 9911
LAB SAMPLE ID: 9D93RP10 MATRIX: WATER
CLIENT ID: B0XN11 DATE RECEIVED: 2/28/2000 1:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	2.23E+03		3.1E+01	5.9E+02	2.95E+00	pCi/L	100.00%	RICHRC5006

Number of Results: 1

0004

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result <

Quanterra Analytical Services, Inc
rptChemRadSample; v3.41

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03095 / 9911
LAB SAMPLE ID: 9D93RQ10 MATRIX: WATER
CLIENT ID: B0XN10 DATE RECEIVED: 2/28/2000 1:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	4.70E+02		2.4E+01	1.3E+02	8.71E+00	pCi/L	97.80%	RICHRC5006

Number of Results: 1

0005

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03095 / 9911

LAB SAMPLE ID: D949K11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	6.82E-01	U	1.3E+00	1.3E+00	2.92E+00	pCi/L	93.30%	RICHRC5006

Number of Results: 1

0006

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,

J = No U qualifier and result < RDL

Quanterra Analytical Services, Inc

rptChemRadBlank; v3.41

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03095 / 9911
LAB SAMPLE ID: D949K12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	6.98E+01		5.8E+00	1.9E+01	3.14E+00	pCi/L	94.80%	6.77E+01	103.03%

Number of Results: 1

0005

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc
rptChemRadLcs; v3.41

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03095 / 9911
LAB SAMPLE ID: D949K13S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	7.50E+01		6.0E+00	2.1E+01	3.13E+00	pCi/L	93.80%	6.75E+01	111.19%

Number of Results: 1

0000

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc
rptChemRadLcs; v3.41

Data Review Checklist RADIOCHEMISTRY

Priority

Lot Number: JOB 280157				
Client ID: BN I				
Due Date: 3-6-00				
QC Batch Number: 0060187		SDG Number: WP3095		
Method Test Parameter: TOTAL Sr				
Matrix: Water				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?			✓	
D. Other				
1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			✓

Comments on any "No" response: _____

First Level Review: Pam Kentzen Date: 3-2-00

Second Level Review: Julie Waddell Date: 3/3/00

CHAIN OF CUSTODY

6-21040

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-014-02		Page #Error of #Error	
Collector <i>Adair</i>	Company Contact Julian Laurenz	Telephone No. 372-9582	Project Coordinator TRENT, SJ		Price Code 1D	Data Turnaround 7 Days			
Project Designation 100-NR-2 Pump & Treat Operational Sampling	Sampling Location <i>NR-2</i>		SAF No. B99-014		Air Quality <input type="checkbox"/>				
Ice Chest No. <i>WM-001</i>	Field Logbook No. <i>EL-1345-1</i>	COA <i>EL-10N102 (562)</i>	Method of Shipment Govt Vehicle						
Shipped To Quanterra Incorporated	Offsite Property No. <i>NA</i>		Bill of Lading/Air Bill No. <i>NA</i>						
POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	<i>N/A</i>							
	Type of Container	<i>P</i>							
	No. of Container(s)	<i>2</i>							
	Volume	<i>500ml</i>							
Special Handling and/or Storage									
SAMPLE ANALYSIS <i>SPX</i> <i>W03095</i> <i>DOB 3-6</i> <i>DOB 380157</i>			TOTAL <i>Sr</i>						
Sample No.	Matrix *	Sample Date	Sample Time						
<i>BOXN11 (INF)</i>	<i>W</i>	<i>2-28-00</i>	<i>1010</i>	<i>X</i>	<i>D93 RP</i>				
<i>BOXN10 (EFF)</i>	<i>W</i>	<i>2-28-00</i>	<i>1010</i>	<i>X</i>	<i>D93 RG</i>				
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By <i>Adair</i>	Date/Time <i>2-28-00/1015</i>	Received By <i>Matthew</i>	Date/Time <i>2/28/00</i>	<i>Sample originated in non-Rad Controlled area. <2000cpm/g</i> <i>NO TA Required</i>				<ul style="list-style-type: none"> S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other 	
Relinquished By <i>Matthew</i>	Date/Time <i>2/28/00</i>	Received By <i>R. Thoren</i>	Date/Time <i>2/28/00/1115</i>						
Relinquished By <i>R. Thoren</i>	Date/Time <i>2-28-00/11330</i>	Received By <i>Matthew</i>	Date/Time <i>2/28/00</i>						
Relinquished By	Date/Time	Received By	Date/Time						
Relinquished By	Date/Time	Received By	Date/Time						
Relinquished By	Date/Time	Received By	Date/Time						
Relinquished By	Date/Time	Received By	Date/Time						
LABORATORY SECTION	Received By	Title		Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time					

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 4-28 1330 SG#: W03095
Work Order Number: JOB 280157 SAF #: B99-014
Shipping Container ID: WM-001 Chain of Custody #: B99-014-02

1. Custody Seals on shipping container intact? Yes [☒] No [☐]
2. Custody Seals dated and signed? Yes [☒] No [☐]
3. Chain-of-Custody record present? Yes [☒] No [☐]
4. Cooler temperature na
5. Vermiculite/packing materials is Wet [☐] Dry [☒]
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? Yes [☐] No [☒]

8. Samples have:
☒ tape ☐ hazard labels
☒ custody seals ☐ appropriate sample labels

9. Samples are:
☒ in good condition ☐ leaking
☐ broken ☐ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [☐] No [☒]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Adair Date: 2-28-00
Telephoned To: _____ On _____ By _____

Client Sample Screening Results

28-Feb-00

63) 2/28/00

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B	
BIIH	B0XN101D93RP		2/28/2000 2:04:00 PM	QUAD21B	2/28/2000 2:50:05 PM	B0XN101D93RP	30	9	0.158333333	65	1.225	
	D93RP	LIQUID		Bkg:	2/26/2000 2:50:58 AM	BKG	600	85	0.141666667	565	0.941666667	
<hr/>												
Anl Date:	2/28/00	Tot Sa, Alq:	5.00E-01	, 1.00E+00	Alp:	(Dpm/ 4.61E-01	(uCi/ 1.04E-04	(pCi/ 2.07E+02	+ 2.3E+02	CAT	1.2E+01	Lab
Ppt mg:	0.9 ✓	Units:	1. ✓	, ml	Ret:	Alq): 2.28E+00	Sa): 5.12E-04	Lqg): 1.02E+03	+ 2.4E+02	I ✓	4.9E-02	Alq Lqg
<hr/>												
BIII	B0XN111D93RQ		2/28/2000 2:04:00 PM	QUAD21C	2/28/2000 2:50:05 PM	B0XN111D93RQ	30	13	0.313333333	116	2.87833333	
	D93RQ	LIQUID		Bkg:	2/26/2000 2:50:58 AM	BKG	600	72	0.12	593	0.988333333	
<hr/>												
Anl Date:	2/28/00	Tot Sa, Alq:	5.00E-01	, 1.00E+00	Alp:	(Dpm/ 8.29E-01	(uCi/ 1.87E-04	(pCi/ 3.73E+02	+ 2.3E+02	CAT	6.7E+02	Lab
Ppt mg:	0.5 ✓	Units:	1. ✓	, ml	Ret:	Alq): 5.47E+00	Sa): 1.23E-03	Lqg): 2.46E+03	+ 3.2E+02	I ✓	2.0E-02	Alq Lqg
<hr/>												

PRIORITY 7 Day TAT

RQC053

Quanterra Incorporated
Information Sheet Rad Prep

Run Date: 2/29/00
Time: 10:52:23

Parent Batch:
Associated Batches:

* QC BATCH: 0060187 *

Page: 1

TH: Total Strontium by GPC
CG: Sr-Total Prp/SepRC5006
SI: CLIENT: HANFORD

Analytical Due Date: 3/06/00

Project Manager: JW2

Lot#	Analyst Due	Client Name	Count	Time	Mid/Ave	Tracer ID	CRDL	Units	Screen Info - (Ci)	PM
Work Order	Client Matrix	Aliquot Geometry			Date/Time	Spike ID			Alpha Beta	Bin
JOB280157-001 D93RP-1-01 WATER Comments: WATER	3/06/00	Bechtel Hanford, .0000	.000	2/28/00	10:10			pCi/L	**NYS 29-02/00	JW2
JOB280157-002 D93RQ-1-01 WATER Comments: WATER	3/06/00	Bechtel Hanford, .0000 80 ml	.000	2/28/00	10:10			pCi/L	**NYS 29-02/00	JW2
JOB290000-187 B D949K-1-01 WATER Comments:	3/06/00	Bechtel Hanford,		2/28/00	10:10		2.00E+00	pCi/L	**NA	JW2
JOB290000-187 C D949K-1-02 WATER Comments:	3/06/00	Bechtel Hanford,		2/28/00	10:10		2	pCi/L	**NA	JW2
JOB290000-187 C D949K-1-03 WATER Comments:	3/06/00	Bechtel Hanford,		2/28/00	10:10		2	pCi/L	**NA	JW2

Total Number of Samples In Batch: 00005

Batch Information: Dry Wt: N Decay Correct: Y Blank Sub: None Call In:
Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected
BLANK CRDL Tracer Yield Type QC Control Limits
Strontium 90 2.00E+00 Strontium Trace (020-105) RPD

** NYS = Not Yet Screened
** NA = Not Applicable
** Other = Other than Gross Alpha or Gross Beta
++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

COC Signature Page

1003095

Lot or Batch #: 0060187

Initials/Date

Procedure #

Released By

KH 2-29-00Rich 10009

Received

DM 2-29-00RICHRC 5006

Released By

DM 3-1-00

n/a

Received

DM 3/1/00RICHRC0003

Released By

DM 3/2/00

n/a

Received

DM 3-2-00Radcal 124

Released By

DM 3-2-00

n/a

Received

PK 3-2-00RICHRC0002

Released By

PK 3-3-00

n/a

Received

Released By

n/a

Received

Released By

n/a

Received

RC-131, Rev. 1, 6/99

2015